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**Keywords:** Spasticity; Botulinum toxin; IncobotulinumtoxinA; Dose titration  
**Background.**– TOWER is a prospective, Phase IV, dose titration clinical trial (NCT01603459) investigating the safety and efficacy of incobotulinumtoxinA (Xeomin®) in patients with spasticity, deemed to require doses higher than currently approved.

**Methods.**– Patients (18–80 years) with upper- and lower-limb spasticity of the same body side due to cerebral causes, deemed by the investigator to require total body doses up to 800 U of incobotulinumtoxinA per injection cycle, will undergo 3 injection cycles (400, 600, and 800 U incobotulinumtoxinA, respectively), each followed by 12- to 16-week observation periods with telephone contacts at 1 and 2 weeks and follow-up visits at 4, 8, and 12–16 weeks post-treatment. Co-primary outcome measures are adverse events and investigator's global assessment of tolerability. Muscle tone (Ashworth Scale), Resistance to Passive Movement Scale, Functional Ambulation Classification scale, Goal Attainment Scale, Disability Assessment Scale, quality of life, antibody formation, and pulmonary function will also be assessed.

**Results.**– As of October 2013, patients (enrolment target 150) are being recruited at 33 sites throughout Europe, Canada and the USA.

**Conclusions.**– TOWER will provide important insights into the safety and efficacy of higher than currently recommended incobotulinumtoxinA doses in patients with multifocal upper- and lower-limb spasticity.

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### Upper limb loading in elbow flexor spastic dystonia

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**Keywords:** Spasticity; Spastic dystonia; Limb loading; Rehabilitation; Stroke; Upper limb function

**Background.**– Studies have demonstrated reduction of spastic dystonia with sustained stretch. The aim of the present work was to evaluate the effects of upper limb wrist-worn loading in a patient with elbow flexor spastic dystonia.

**Methods.**– A 53-year old male with left spastic hemiparesis secondary to a cerebral infarct 2 years prior has benefited from a 3-month rehabilitation program, including botulinum toxin injections at the Neurorehabilitation Day Hospital in Albert-Chenevier hospital, Créteil, France. Within this program the patient has worn a loaded wrist splint (1.5 kg) daily. Every day, he reported the total loading time together with any untoward effects in a diary. Once monthly we monitored spasticity with the Tardieu Scale and active arm function with the Modified Frenchay Scale using blinded review by two examiners.

**Results.**– Maximal range of passive motion against the elbow flexors ( $X_{V1}$ ) increased from 144° to 164° (+20°), angle of catch ( $X_{V3}$ ) from 92° to 116° (+24°) and active motion range (A) from 78° to 92° (+14°). Regarding active limb function, score improved by 1/10 point for three tasks involving active elbow extension.

**Conclusion.**– Upper limb loading may be of benefit in hemiparesis to reduce elbow flexor spastic dystonia and improve functionality.

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### Treatment of scoliosis with paraspinal injection of botulinum toxin in quadriplegic woman

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**Keywords:** Stroke; Paraspinal; Botulinum; Toxin

**Background.**– Type A botulinum toxin has been used in paraspinal muscles for several conditions like stiff-person syndrome, back pain in cerebral palsy, chronic low back pain, X-linked dystonia-parkinsonism.

**Methods.**– A 30-years old woman developed a spastic quadriplegia with right side more involved, after a severe stroke at the age of 19. Although she was following a rehabilitation programme for several years, she only improved her ability to walk slowly for up to 30 steps unaided.

**Results.**– After treatment with type A botulinum toxin (Botox) for 6 years in limb muscles, during the last 2 years, she developed a scoliosis which interfered with her gait pattern. Right paraspinal thoracic muscles were injected, with botulinum toxin in 6 segments, using 20 U in each site. This treatment was repeated 4 times each year. Patient improved posture in standing position and facilitated the gait pattern and velocity. She could walk more than 50 steps without assistance, without body shifting and with a faster gait speed.

**Conclusions.**– Administration of botulinum toxin A reduced the tone of paraspinal and improves significantly improvement of gait pattern in quadriplegic woman.

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### Hereditary spastic paraparesis and intrathecal baclofen

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**Keywords:** Hereditary spastic paraparesis; Intrathecal baclofen; Spasticity

**Background.**– Intrathecal baclofen has been used to treat lower limb spasticity in hereditary spastic paraparesis. Botulinum toxin type A has also been used for the same reason.

**Methods.**– We present three cases of women (aged 47, 58, and 59) with hereditary spastic paraparesis treated in our PRM department.

**Results.**– Patients were under intramuscular antispastic treatment with 400 U of type A botulinum toxin for two years period, in hip adductors, hamstrings and triceps surae. After 4, 8, 12, 16, 20 and 24 months of botulinum toxin, Modified Ashworth Scale showed improvement of spasticity not enough to improve the gait velocity, measured with 10 m walking test. Patients were referred to Neurosurgical department where they were treated with permanent intrathecal baclofen pump, after positive test of 50 µg baclofen intrathecally. MAS score was also improved but with not significant improvement in gait pattern. Daily living activities were improved.

**Conclusions.**– Both botulinum toxin and intrathecal baclofen can reduce spasticity in hereditary spastic paraparesis. Walking ability of these persons is still a big question depending on the degree of paralysis and the severity of the disease.

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### Botulinum toxin treatment using flexible intervals for cervical dystonia

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